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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,937	08/09/2001	Kurudi H. Muralidhar	7287-000017	4932

27572 7590 08/19/2005

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EXAMINER	
ZHEN, LI B	

ART UNIT	PAPER NUMBER
2194	

DATE MAILED: 08/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/925,937	MURALIDHAR ET AL.	
	Examiner	Art Unit	
	Li B. Zhen	2194	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1 – 20 are pending in the current application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1 – 20 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,442,442 to Weinhofer in view of U.S. Patent No. 6,466,827 to Stine [both references cited in the previous office action].**

4. As to claim 1, Weinhofer teaches the invention substantially as claimed including input/output (I/O) devices [a servo drive 25, a motor 27 and a feedback sensor 29, col. 5, lines 50 – 57; a input devices 16 and a plurality of output devices 17, col. 5, lines 12 – 26] connected to a network of an industrial control system [control system 10, Fig. 1; col. 5, lines 12 – 25], comprising:

a first network [motion control axis 21-1; col. 5, lines 50 – 56];

a plurality of I/O devices connected to the first network [a servo drive 25, a motor 27 and a feedback sensor 29, col. 5, lines 50 – 57; a input devices 16 and a plurality of output devices 17, col. 5, lines 12 – 26]; and

a master computer [gear object may be used to define a master and slave axis; col. 10, lines 48 – 63] coupled to the first network and including control software [icons

114 and 116 represent motion control axes; col. 6, lines 13 – 28] with an object oriented model [col. 6, lines 39 – 50] for defining one of attributes, parameters and operations of the I/O devices [axis object 312, an adder object 314, a jog object 316, a move object 318, a time cam object 320, a gear object 322 and a position cam object 324, Fig. 5; col. 10, lines 3 – 13].

5. Although Weinhofer teaches the invention substantially, Weinhofer does not specifically teach cloning properties of input/output devices.

However, Stine teaches an industrial control system [industrial control system 10, Fig. 1; col. 4, lines 57 – 60], a plurality of I/O devices connected to a network [hopper 14, auger conveyor 16 and turnhead 18 have electrical actuators and sensors for the control of their operation; col. 5, lines 1 – 5], control software with an object oriented model for defining one of attributes, parameters and operations of the I/O devices [relay ladder object 66 for the conveyor 16 may be written using standard relay ladder language in which virtual contacts and virtual output coils are arranged as graphical elements in rungs across virtual power rails to provide the logic that would be provided by physical rungs of the same topology; col. 7, lines 46 – 62] to allow cloning of at least one of the I/O devices [relay ladder object 66 is duplicated many times; col. 7, lines 46 – 60], a master computer cloning properties of a first I/O device [relay ladder object 66 is duplicated many times within the memory 54 of the programmable logic controller 24; col. 7, lines 45 – 61] that is connected to the first network including the one of attributes, parameters, and operations [a relay ladder object 66 in each of its instances provides for the same logic....V1-V6 are used to represent input and output values for a first relay

ladder object 66 whereas for a second relay ladder logic, the identical instructions (rungs) are stored but referenced with different variable values V7-V12; col. 7, lines 45 – 61] in order to configure a second I/O device that is subsequently connected to the first network [control program logically coordinating operation of different interconnected equipment by exchanging data by the predefined relay ladder objects matched to the equipment; col. 2, line 59 – col. 3, line 3].

6. It would have been obvious to a person of ordinary skill in the art at the time of the invention to apply the teaching of a control software with object oriented model to allow cloning properties of input/output devices as taught by Stine to the invention of Weinhofer because this provides objects that are defined with respect to individual pieces of equipment to ensure generality for a variety of processes that use that particular piece of equipment and permits rapid program development through code reusability [col. 2, lines 18 – 23 of Stine].

7. As to claim 10, Weinhofer as modified teaches a system for cloning input/output (I/O) devices [relay ladder object 66 is duplicated many times; col. 7, lines 46 – 60 of Stine] connected to a network of an industrial control system [control system 10, Fig. 1, col. 5, lines 12 – 25 of Weinhofer; col. 4, lines 57 – 60 of Stine], comprising:

a first network [motion control axis 21-1; col. 5, lines 50 – 56 of Weinhofer];

a second network [motion control axis 21-2; col. 5, lines 50 – 56 of Weinhofer] coupled to the first network [communication network 14, Fig. 1; col. 5, lines 12 – 26 of Weinhofer];

a first plurality of I/O devices connected to the first network [a servo drive 25, a motor 27 and a feedback sensor 29, col. 5, lines 50 – 57; a input devices 16 and a plurality of output devices 17, col. 5, lines 12 – 26 of Weinhofer];

a second plurality of I/O devices connected to the second network [each motion control axis 21-1 and 21-2 further comprises a servo drive 25, a motor 27 and a feedback sensor 29, col. 5, lines 50 – 57 and col. 5, lines 12 – 26 of Weinhofer]; and

a master computer [gear object may be used to define a master and slave axis; col. 10, lines 48 – 63 of Weinhofer] coupled to one of the first and second networks and including control software [icons 114 and 116 represent motion control axes, col. 6, lines 13 – 28 of Weinhofer; third icon which represents a physical relationship between the first and second motion control systems, col. 4, lines 1 – 7 of Weinhofer] with an object oriented model [col. 6, lines 39 – 50 of Weinhofer] for defining one of attributes and operations of at least one of the I/O devices on one of the first and second networks [axis object 312, an adder object 314, a jog object 316, a move object 318, a time cam object 320, a gear object 322 and a position cam object 324, Fig. 5; col. 10, lines 3 – 13 of Weinhofer], wherein the master computer cloning properties of a first I/O device [relay ladder object 66 is duplicated many times within the memory 54 of the programmable logic controller 24; col. 7, lines 45 – 61] that is connected to one of the first and second network including the one of attributes, parameters, and operations [a relay ladder object 66 in each of its instances provides for the same logic....V1-V6 are used to represent input and output values for a first relay ladder object 66 whereas for a second relay ladder logic, the identical instructions (rungs) are stored but referenced with

different variable values V7-V12; col. 7, lines 45 – 61] in order to configure a second I/O device that is subsequently connected to the first network [control program logically coordinating operation of different interconnected equipment by exchanging data by the predefined relay ladder objects matched to the equipment; col. 2, line 59 – col. 3, line 3]

8. As to claim 2, Weinhofer as modified teaches the object oriented model includes a hierarchical class structure with inheritance properties [col. 10, lines 4 – 12 and 19 – 25 of Weinhofer].

9. As to claim 3, Weinhofer as modified teaches the hierarchical class structure includes a device class [col. 10, lines 4 – 13 of Weinhofer].

10. As to claim 4, Weinhofer as modified teaches the device class includes a plurality of device types [col. 10, lines 3 – 13 of Weinhofer].

11. As to claim 5, Weinhofer as modified teaches the object oriented model includes at least one class level hierarchically below the device class [col. 10, lines 4 – 12 and 19 – 25 of Weinhofer; col. 2, lines 18 – 33 of Stine].

12. As to claim 6, Weinhofer as modified teaches devices instantiated at the at least one class level inherit the one of the attributes, parameters and operations of the at least one class level and a device type of the device class from which the at least one class level depends [Instances of the node object include an axis object 312, an adder object 314, a jog object 316, a move object 318, a time cam object 320, a gear object 322 and a position cam object 324; col. 10, lines 3 – 13 of Weinhofer].

13. As to claim 7, Weinhofer as modified teaches the device types include at least one of analog and digital devices [col. 1, lines 33 – 36 of Stine].

14. As to claim 8, Weinhofer as modified teaches the control software includes a graphical user interface for interfacing the control software and cloning the I/O devices [user program; col. 7, lines 37 – 63 of Weinhofer].

15. As to claim 9, Weinhofer as modified teaches the I/O devices include at least one of barcode readers, sensors [feedback sensor 29; col. 5, line 52 of Weinhofer], actuators, and motor starters [motion control axis 21-2 is controlled as a function of the actual position of the motor 27 of the motion control axis 21-1, as indicated by the sensor 29 for the motion control axis 21-1; col. 9, lines 22 – 34 of Weinhofer].

16. As to claim 18, Weinhofer as modified teaches the first and second networks are connected by a gateway [communication network 14, Fig. 1; col. 5, lines 12 – 25 of Weinhofer].

17. As to claim 19, Weinhofer as modified teaches the first and second networks are different types of networks [first and second motion control axes may be associated with two different industrial controllers that are connected to each other by a network communication link; col. 3, lines 49 – 55 of Weinhofer].

18. As to claims 11 – 17 and 20, these are rejected for the same reasons as claims 2 – 9 above.

Response to Arguments

19. Applicant's arguments filed April 11, 2005 have been fully considered but they are not persuasive. In response to the Non-Final Office Action dated January 11, 2005, applicant argues:

(1) Weinhofer teaches a new instance of an icon object assumes all of the attributes associated with the particular class of objects to which the original icon belonged [p. 8, lines 20 – 23], but the new icon does not assume all of the properties of the original icon [p. 9, lines 1 – 3; p. 11, lines 6 – 13]; and

(2) The programmable logic controller of Stine does not clone properties of a first input/output device in order to configure a second input/out device [p. 9, lines 15 – 21].

As to argument (1), examiner respectfully disagrees and submits that assuming attributes is equivalent to assuming properties because both attribute and property means characteristic or trait. Examiner also notes that the specification refers to property or attribute of I/O devices [p. 5, paragraph 0022].

In response to argument (2), examiner respectfully disagrees and notes that Stine teaches cloning I/O objects [relay ladder object 66 is duplicated many times; col. 7, lines 46 – 60] and the duplicated relay ladder objects share the same program logic [the identical instructions (rungs) are stored; col. 7, lines 45 – 61]. Examiner interpreted the newly recited limitation as cloning properties of an I/O device and the properties include one of attributes, parameters, and operations. The new limitation only requires one of attributes, parameters, and operations [emphasis added]. Since Stine teaches

duplicating relay ladder objects that have the same program logic, then Stine teaches duplicating operations, which reads on the newly recited limitation. In addition, Weinhofer teaches cloning attributes [see response to argument (1) and rejection to claim 1 above]. Therefore, the combination of Weinhofer and Stine teaches the invention as claimed.

Conclusion

20. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li B. Zhen whose telephone number is (571) 272-3768. The examiner can normally be reached on Mon - Fri, 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Li B. Zhen
Examiner
Art Unit 2194

lbz
August 10, 2005

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